

L Number	Hits	Search Text	DB	Time stamp
1	2	6436472.did.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:05
2	1713	"349" and (orientation adj film)	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:07
3	18	"349" and (slit adj nozzle)	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:08
4	1	("349" and (orientation adj film)) and ("349" and (slit adj nozzle))	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:09
5	5	"349" and (slit adj coater)	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:10
6	551	"118" and (orientation adj film)	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:26
7	14	"118" and (slit adj coater)	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:14
8	0	("118" and (orientation adj film)) and ("118" and (slit adj coater))	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:12
9	0	(spray\$6) near10 (orientation adj film) near10 (surface adj tension)	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:15
10	17	(orientation adj film) near10 (surface adj tension)	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:17
11	0	(orientation adj (material or film)) near10 (6436472.did.)	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:18
12	474	(orientation adj (material or film)) near10 (thickness)	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:19
13	1	(orientation adj (material or film)) near10 (constant or maintain) near10 (surface adj tension)	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:20
14	171	"118" and (slit adj nozzle)	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:22

15	0	("118" and (orientation adj film)) and ("118" and (slit adj nozzle))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:22
16	0	(slit adj nozzle) near10 (film) near10 (surafce adj tension)	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:27
17	0	(slit adj coater) near10 (film) near10 (surafce adj tension)	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:27
18	0	(slit adj nozzle) near (film) near (surafce adj tension)	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:27
19	0	(slit adj nozzle) near (film) near (surface adj tension)	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:28
20	0	(slit adj coater) near (film) near (surface adj tension)	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:28
21	2	(slit adj nozzle) near10 coating near10 tension	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:33
22	52721	(coating or film or material) near10 tension	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:45
23	14	((coating or film or material) near10 tension) and ("118" and (slit adj nozzle))	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 17:05
24	2975	(coating or film or material) near10 (uniform or constant or maintian) near10 tension	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:48
25	4200	(coating or film or material) near10 (uniform or constant or maintain) near10 tension	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:51
26	2	("118" and (slit adj nozzle)) and ((coating or film or material) near10 (uniform or constant or maintain) near10 tension)	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:52
27	352	(surface adj tension) near10 (material or film or coating) near10 (constant or maintian or uniform)	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:53
28	476	(surface adj tension) near10 (material or film or coating) near10 (constant or maintain or uniform)	USPÄT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/07 16:55

29	2	("118" and (slit adj nozzle)) and ((surface adj tension) near10 (material or film or coating) near10 (constant or maintain or uniform))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:00
30	0	(slit adj nozzle) near (surface adj tension) near (coating adj material)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:01
31	19	"118" and ((uniform or constant) adj (surface adj tension))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:03
32	0	("118" and (slit adj nozzle)) and ("118" and ((uniform or constant) adj (surface adj tension)))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:03
33	0	(slit adj nozzle) near10 (constant or uniform or maintain) near10 (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:06
34	0	(slit adj coater) near10 (constant or uniform or maintain) near10 (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:08
35	0	(slit adj coater) near10 (constant or uniform or maintain) near10 (tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:08
36	0	(slit adj nozzle) near10 (constant or uniform or maintain) near10 (tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:09
37	3	(film adj formation) near10 (constant or uniform or maintain) near10 (tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:12
38	0	(film adj formation) near10 (constant or uniform or maintain) near10 (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:11
39	1	(extrusion) near10 (constant or uniform or maintain) near10 (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:12
40	38	(spray) near10 (constant or uniform or maintain) near10 (tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:13
41	15	(spray) near10 (constant or uniform or maintain) near10 (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:14
42	0	(spray) near10 film near10 (constant or uniform or maintain) near10 (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:14

43	0	(spray adj coating) near10 (uniform or constant or maintain) near10 (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:15
44	0	(spray adj coat) near10 (uniform or constant or maintain) near10 (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:16
45	0	(spray adj coater) near10 (uniform or constant or maintain) near10 (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:18
46	0	(slit adj coater) near10 (uniform or constant or maintain) near10 (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:18
-	360	(349/123).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 15:55
-	12	(liquid crystal) adj (orientation film) adj (extrusion nozzle)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 14:53
-	1	(liquid crystal) adj (alignment) adj (extrusion nozzle)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 14:54
-	14	(liquid crystal) adj (substrate) adj (extrusion nozzle)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 14:56
-	0	(liquid crystal) adj (spacers) adj (extrusion nozzle)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 14:56
-	21	(spacers) adj (extrusion nozzle)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 14:56
-	1264	349/155	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 15:00
-	5	"5477356"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 15:16
-	126	TOK.AS.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 15:18
-	2249	"Tokyo Ohka Kogyo".AS.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 15:19

-	2	"6436472"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2002/09/18 15:58
-	0	"6436472" near (alignment layer)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2002/09/18 15:59
-	0	"6436472" and (alignment layer)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2002/09/18 15:59
-	0	"6436472" adj (alignment layer)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2002/09/18 15:59
-	1364	(slit nozzle) adj (orientation film)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2002/09/18 16:06
-	2	(slit nozzle) adj (orientation film) adj (liquid crystal)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2002/09/18 16:08
-	2903	(slit nozzle) adj (liquid crystal)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2002/09/18 16:10
-	0	(liquid crystal) adj (laser) adj (patterning)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2002/09/18 17:20
-	42	(liquid crystal) adj (patterning)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2002/09/18 17:20
-	0	(eximer) adj (orientation film)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2002/09/19 09:04
-	1153	eximer	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2002/09/19 09:40
-	326	(orientation film) adj (0.8 micrometers)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2002/09/19 09:41
-	42	(liquid crystal) adj (patterning)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2002/09/19 10:12
-	0	(liquid crystal) adj (laser) adj (patterning)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2002/09/19 10:11

-	1229	(patterning)adj (alignment film)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 10:26
-	0	(eximer) adj (patterning)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 10:27
-	1	(eximer) near (patterning)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 10:27
-	0	(liquid crystal) near (eximer)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 10:30
-	0	(Laser) adj (film) adj (patterning)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 10:31
-	415	(Laser) adj (patterning)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 10:43
-	3	"6261856"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 10:43

Set	Items	Description
S1	18164	ORIENTAT?(2N) (MATERIAL ? OR FILM?)
S2	22	SILT?(3N)NOZZLE?
S3	1703561	COATING? ? OR COAT? OR COATED OR PLATING? ?
S4	70176	SURFACE()TENSION?
S5	1862094	SPRAY? OR SCATTER? OR SPREAD?
S6	4187806	SUBSTRATE? OR IC OR WAFER? OR INTEGRATED()CIRCUIT? OR SEMI- CONDUCT? OR SEMI()CONDUCT?
S7	10068	S1 AND S6
S8	31	S7 AND S4
S9	4095	SLIT?(3N)NOZZLE?
S10	0	S8 AND S9
S11	2095	S7 AND S3
S12	153	S11 AND (S9 OR S5)
S13	0	S12 AND S4
S14	0	S1 AND S4 AND S9
S15	2282	S4 AND S3 AND FILM?
S16	583	S4(10N)S3(10N)FILM?
S17	2	S16 AND S9
S18	1	RD (unique items)
S19	16	S16 AND NOZZL?
S20	15	S19 NOT S18
S21	15	RD (unique items)
? s (constant? or stead? or stabl?) (3n)s4		
	1751415	CONSTANT?
	454422	STEAD?
	1167881	STABL?
	70176	S4
S22	849	(CONSTANT? OR STEAD? OR STABL?) (3N)S4
? s s22 and s3		
	849	S22
	1703561	S3
S23	46	S22 AND S3

SYSTEM:OS - DIALOG OneSearch

File 315:ChemEng & Biotec Abs 1970-2003/Feb

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**\*File 6: Alert feature enhanced for multiple files, duplicates removal, customized scheduling. See HELP ALERT.**

File 8:Ei Compendex(R) 1970-2003/Mar W1

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**\*File 8: Alert feature enhanced for multiple files, duplicates removal, customized scheduling. See HELP ALERT.**

File 347:JAPIO Oct 1976-2002/Nov(Updated 030306)

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**\*File 347: JAPIO data problems with year 2000 records are now fixed. Alerts have been run. See HELP NEWS 347 for details.**

File 350:Derwent WPIX 1963-2003/UD,UM &UP=200316

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**\*File 350: Alerts can now have images sent via all delivery methods. See HELP ALERT and HELP PRINT for more info.**

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**\*File 94: UDs have been adjusted to reflect current months data. There is no data missing.**

File 35:Dissertation Abs Online 1861-2003/Feb

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File 65:Inside Conferences 1993-2003/Mar W2

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File 34:SciSearch(R) Cited Ref Sci 1990-2003/Mar W1

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**\*File 34: Alert feature enhanced for multiple files, duplicates removal, customized scheduling. See HELP ALERT.**

File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec

(c) 1998 Inst for Sci Info

18/9/1 (Item 1 from file: 94)  
DIALOG(R)File 94:JICST-EPlus  
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02340020 JICST ACCESSION NUMBER: 95A0540605 FILE SEGMENT: JICST-E  
**Gas Wiping Mechanism in Hot-Dip Coating Process.**  
TAKEISHI YOSHIAKI (1); YAMAUCHI AKIYOSHI (2); MIYAUCHI SUMITAKA (3)  
(1) Sumitomo Met. Ind., Ltd., Kenkyu Kaihatsu Honbu; (2) Sumitomo Met.  
Ind., Ltd., Kashima Steel Work.; (3) Sumitomo Met. Ind., Ltd., Wakayama  
Steel Work.  
Tetsu to Hagane(Journal of the Iron and Steel Institute of Japan), 1995,  
VOL.81,NO.6, PAGE.643-648, FIG.15, REF.14  
JOURNAL NUMBER: F0332AAH ISSN NO: 0021-1575 CODEN: TEHAA  
UNIVERSAL DECIMAL CLASSIFICATION: 621.793.5  
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan  
DOCUMENT TYPE: Journal  
ARTICLE TYPE: Original paper  
MEDIA TYPE: Printed Publication  
ABSTRACT: The liquid **film** flow on a strip steadily moving upward from a  
coating liquid bath in the gas wiping process for continuous hot-dip  
**coating** was analytically investigated assuming that the flow was  
time-independent and laminar and ~~the~~ **surface tension** was  
negligible. The **coating** thickness profile of the liquid **film** can be  
estimated by solving the equation of motion under the boundary  
conditions that both the impinging pressure and the shear stress of the  
gas wiping jet act on the liquid film surface. The analytical results  
of the coating thickness profiles agree well with the experimental  
results measured by the needle electrode method using glycerine-water  
solution. The analytical results were also compared with data obtained  
in a commercial hot-dip galvanizing line. It is confirmed that the  
effects of the line speed, the nozzle pressure, the nozzle-to-strip  
distance and the **nozzle slit** gap on the zinc coating weight can be  
explained well by the analysis and that the coating weight can be  
estimated within  $\pm 20\%$  accuracy. (author abst.)  
DESCRIPTORS: hot dip coating; plating thickness; film(cover); surface  
current(fluid); collision strength; shear strength; homogeneity;  
modeling; process control; jet(flow); film flow  
BROADER DESCRIPTORS: plating; surface treatment; treatment; film thickness;  
thickness; length; geometric quantity; membrane and film; fluid flow;  
strength; mechanical property; property; operation(processing); control  
CLASSIFICATION CODE(S): WC08026A  
?

21/9/2 (Item 2 from file: 347)  
DIALOG(R) File 347:JAPIO  
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05682605 \*\*Image available\*\*  
DEVELOPING METHOD

PUB. NO.: 09-297405 [JP 9297405 A]  
PUBLISHED: November 18, 1997 (19971118)  
INVENTOR(s): HANEDA AKIO  
DOCHI KATSUNORI  
APPLICANT(s): TOPPAN PRINTING CO LTD [000319] (A Japanese Company or Corporation), JP (Japan)  
APPL. NO.: 08-113638 [JP 96113638]  
FILED: May 08, 1996 (19960508)  
INTL CLASS: [6] G03F-007/30; H01L-021/027  
JAPIO CLASS: 29.1 (PRECISION INSTRUMENTS -- Photography & Cinematography);  
14.2 (ORGANIC CHEMISTRY -- High Polymer Molecular Compounds);  
42.2 (ELECTRONICS -- Solid State Components)  
JAPIO KEYWORD: R011 (LIQUID CRYSTALS); R044 (CHEMISTRY -- Photosensitive Resins)

#### ABSTRACT

PROBLEM TO BE SOLVED: To form the uniform liquid film of a developer, to reduce nonuniform development and to effectively remove the residue by providing an auxiliary developing stage for using and then discarding a developer before or after regular development.

SOLUTION: An auxiliary developing stage for using and then discarding a developer is provided before or behind a developing chamber A for regular development. A curtain-flow nozzle 2a for uniformly discharging a developer 1, for example, in the form of curtain is furnished to a developing chamber B provided before the developing chamber A, the developer is dripped on a body 4 to be developed, and the dripped waste liquid is used, discarded and subjected to waste liquid treatment. The developer is sprayed from the nozzle 2a on the body 4 almost without any surplus pressure but only by gravity. Consequently, the developer 1 is not immediately scattered from the body 4 surface by the pressure of the developer 1 itself, and the developer 1 is softly retained on the body 4 surface by surface tension to form a coating film.

21/9/3 (Item 3 from file: 347)  
DIALOG(R) File 347:JAPIO  
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05564508 \*\*Image available\*\*  
COATING DEVICE OF PHOTORESIST

PUB. NO.: 09-179308 [JP 9179308 A]  
PUBLISHED: July 11, 1997 (19970711)  
INVENTOR(s): SAEKI MASAHIKO  
KOIZUMI TOYOHARU  
APPLICANT(s): HITACHI CABLE LTD [000512] (A Japanese Company or Corporation), JP (Japan)  
APPL. NO.: 07-340700 [JP 95340700]  
FILED: December 27, 1995 (19951227)  
INTL CLASS: [6] G03F-007/16; B05C-001/08; B05C-011/06; H01L-021/027  
JAPIO CLASS: 29.1 (PRECISION INSTRUMENTS -- Photography & Cinematography);  
14.7 (ORGANIC CHEMISTRY -- Coating Material Adhesives); 42.2

(ELECTRONICS -- Solid State Components)  
JAPIO KEYWORD:R119 (CHEMISTRY -- Heat Resistant Resins)

ABSTRACT

PROBLEM TO BE SOLVED: To obtain uniform thickness of a coating resist film and to perform complete etching.

SOLUTION: This coating device of a photoresist is used to continuously apply a photosensitive photoresist liquid 4 on the surface of a metal foil laminated on an insulating film 1. Air is blown from a compressor 16 through an air nozzle 11 to the resist film 8 applied on the surface of the metal foil. Air is blown to both sides of the film where the coating film easily builds up due to surface tension in such a manner that the air blown just after coating gives force to the resist film against the surface tension. Thus, the resist film is made flat, and as a result, a good wire pattern can be obtained

21/9/7 (Item 7 from file: 347)  
DIALOG(R)File 347:JAPIO  
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03197070 \*\*Image available\*\*  
SPIN COATING METHOD

PUB. NO.: 02-172570 [JP 2172570 A]  
PUBLISHED: July 04, 1990 (19900704)  
INVENTOR(s): TAKEDA HIDEO  
APPLICANT(s): FUJI PHOTO FILM CO LTD [000520] (A Japanese Company or Corporation), JP (Japan)  
APPL. NO.: 63-326103 [JP 88326103]  
FILED: December 26, 1988 (19881226)  
INTL CLASS: [5] B05D-001/40  
JAPIO CLASS: 14.7 (ORGANIC CHEMISTRY -- Coating Material Adhesives)  
JOURNAL: Section: C, Section No. 761, Vol. 14, No. 439, Pg. 101, September 19, 1990 (19900919)

ABSTRACT

PURPOSE: To obtain a uniform coating film having no coating irregularity by preventing the involution of air and the splashing of a liquid by prescribing the relation between the flow velocity of a coating solution and the caliber of a nozzle on the basis of the physical properties of the coating solution itself according to a specific formula.

CONSTITUTION: When a pump is operated, the coating solution in a tank is introduced into the pump on the suction side thereof through a conduit and a filter and sent out under pressure therefrom on the sucking-out side thereof. At this time, the flow velocity V of the coating solution in a nozzle and the caliber D of the nozzle are prescribed to the relation represented by formula I on the basis of the specific gravity .rho., viscosity .eta. and surface tension .gamma. of the coating solution. By this method, the involution of air or splashing of the coating solution is not generated and a coating film having universality and no coating irregularity can be formed, and the yield and quality of a product are enhanced and operability is also enhanced.

21/9/10 (Item 1 from file: 350)  
DIALOG(R)File 350:Derwent WPIX  
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014922541      \*\*Image available\*\*

WPI Acc No: 2002-743248/200281

XRPX Acc No: N02-585422

**Development method for photoresist in semiconductor manufacture involves coating photoresist with thin film and heaped developer using surface tension**

Patent Assignee: HITACHI LTD (HITA )

Number of Countries: 001    Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
JP 6112117	A	19940422	JP 92261860	A	19920930	200281 B

Priority Applications (No Type Date): JP 92261860 A 19920930

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 6112117	A		15	H01L-021/027	

Abstract (Basic): JP 6112117 A

NOVELTY - Covering a photoresist with a thin film, patterning and developing the thin film by heaping up a developer using surface tension, then washing off the developer using a rinse head and spin drying process.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for a substrate developer with a chamber for applying the photoresist and thin film layer, with a supply nozzle to apply the developer. A chuck holds the substrate and a second chamber, or second area of the same chamber, contains a shower nozzle to clean off the developer.

USE - Used in developing photoresist layers for semiconductor manufacture.

DESCRIPTION OF DRAWING(S) - The drawing shows a cross section of the development equipment.

pp; 15 DwgNo 3/6

Title Terms: DEVELOP; METHOD; PHOTORESIST; SEMICONDUCTOR; MANUFACTURE; COATING; PHOTORESIST; THIN; FILM; HEAP; DEVELOP; SURFACE; TENSION

Derwent Class: U11

International Patent Class (Main): H01L-021/027

File Segment: EPI

Manual Codes (EPI/S-X): U11-A11; U11-C06A1B; U11-C09X

21/9/11      (Item 2 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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007671432 -

WPI Acc No: 1988-305364/198843

XRAM Acc No: C88-135424

XRPX Acc No: N88-231448

**Nozzle plate coating for ink jet printing head - contg. smooth ultra-thin film of poly-dimethyl-polysiloxane on silicon substrate prepd. by spin-coating**

Patent Assignee: ANONYMOUS (ANON )

Number of Countries: 001    Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
RD 293018	A	19880910				198843 B

Priority Applications (No Type Date): RD 88293018 A 19880820

Abstract (Basic): RD 293018 A

Ink jet **nozzle** coating comprising a smooth, ultra thin film of a polydimethylsiloxane (PDMS) on a silicon substrate prep'd. by spin-coating is described. This film gives 0.06 dynamic coefft. of friction against paper, the lowest value ever reported for polymer-paper sliding pairs. The value is about 1/3 of the coefft. of friction (0.21) between PTFE and paper. The coating is not scratchable by sliding a stainless steel stylus over the surface with a pressure greater than  $3.6 \times 10$  power 10 dynes/cm<sup>2</sup>. The film displays a surface tension of 20.5 dynes/cm. It is stable in water and propylene glycol. The film is durable solid lubricant. The surface characteristics of a spray-coated PDMS and a plasma copolymerised thin film of perfluoropropane and 3,3,3-trifluoropropylmethyldimethoxysilane have also been investigated. Both **films** show lower scratch resistance, weaker adhesion to the silicon substrate, and high friction. The plasma **film** yields the same **surface tension** as the spin-coated PDMS. Its surface energy increases after soaking in water or propylene glycol. The low friction and high scratch resistance of the ultrathin film of PDMS are due to the absence of deformation and tearing components and a low adhesion component in the sliding friction mechanism.

Title Terms: **NOZZLE** ; PLATE; COATING; INK; JET; PRINT; HEAD; CONTAIN;  
SMOOTH; ULTRA; THIN; FILM; POLY; DI; METHYL; POLYSILOXANE; SILICON;  
SUBSTRATE; PREPARATION; SPIN; COATING  
Derwent Class: A26; A97; G02; P75; T04  
International Patent Class (Additional): B41J-000/01  
File Segment: CPI; EPI; EngPI  
Manual Codes (CPI/A-N): A06-A00E4; A12-W07F; G05-F  
Manual Codes (EPI/S-X): T04-G02  
Plasdoc Codes (KS): 0231 1306 2423 2440 2608 2609 2622 2654 2658 3252 2661  
2662 2729 2814  
Polymer Fragment Codes (PF):  
\*001\* 014 04- 05- 229 38- 431 433 445 477 54& 541 548 549 551 560 561 575  
596 597 599 600 602 603 659 720

21/9/13 (Item 1 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci  
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04058227 Genuine Article#: RB425 Number of References: 9  
**Title: GAS WIPING MECHANISM IN HOT-DIP COATING PROCESS**  
Author(s): TAKEISHI Y; YAMAUCHI A; MIYAUCHI S  
Corporate Source: SUMITOMO MET IND LTD, IRON & STEEL RES LABS, 16-10AZA  
SUNAYAMA/HASAKI/IBARAKI 31402/JAPAN/; SUMITOMO MET IND LTD, KASHIMA  
STEEL WORKS/KASHIMA//JAPAN/; SUMITOMO MET IND LTD, WAKAYAMA STEEL  
WORKS/WAKAYAMA//JAPAN/  
Journal: TETSU TO HAGANE-JOURNAL OF THE IRON AND STEEL INSTITUTE OF JAPAN,  
1995, V81, N6 (JUN), P643-648  
ISSN: 0021-1575  
Language: JAPANESE Document Type: ARTICLE  
Geographic Location: JAPAN  
Subfile: SciSearch; CC ENGI--Current Contents, Engineering, Technology &  
Applied Sciences  
Journal Subject Category: METALLURGY & METALLURGICAL ENGINEERING  
Abstract: The liquid **film** flow on a strip steadily moving upward from a  
coating liquid bath in the gas wiping process for continuous hot-dip  
**coating** was analytically investigated assuming that the flow was  
time-independent and laminar and the **surface tension** was  
negligible. The **coating** thickness profile of the liquid **film** can be  
estimated by solving the equation of motion under the boundary

conditions that both the impinging pressure and the shear stress of the gas wiping jet act on the liquid film surface. The analytical results of the coating thickness profiles agree well with the experimental results measured by the needle electrode method using glycerine-water solution. The analytical results were also compared with data obtained in a commercial hot-dip galvanizing line. it is confirmed that the effects of the line speed, the **nozzle** pressure, the nozzle -to-strip distance and the **nozzle** slit gap on the zinc coating weight can be explained well by the analysis and that the coating weight can be estimated within +/-20% accuracy.

Descriptors--Author Keywords: HOT-DIP COATING ; GAS WIPING ; THIN FILM FLOW ; IMPINGING JET ; IMPINGING WALL PRESSURE ; SHEAR STRESS ; COATING THICKNESS ; CONTINUOUS GALVANIZING LINE

Cited References:

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TUCK EO, 1984, V30, P808, AICHE J  
TUCK EO, 1983, V26, P2352, PHYS FLUIDS

?

27/9/1 (Item 1 from file: 315)  
DIALOG(R)File 315:ChemEng & Biotec Abs  
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454343 CEABA Accession No.: 30-03-003751 DOCUMENT TYPE: Journal  
**Title: Computational analysis of slot coating on a tensioned web.**  
AUTHOR: Feng J.Q.  
CORPORATE SOURCE: Xerox Corp. Wilson Centre Res. Technol. Webster, NY 14580  
USA  
JOURNAL: AIChE J., Volume: 44, Issue: 10, Page(s): 2137-2143  
CODEN: AICEAC ISSN: 00011541  
PUBLICATION DATE: Oct 1998 (19981000) LANGUAGE: English  
ABSTRACT: The elastohydrodynamic interaction between the tensioned-web deformation and the viscous liquid flow in the **coating** bead was studied by finite element computational analysis. The elastohydrodynamic effects in tensioned-web slot **coating** are examined in relation to variations of the liquid feeding rate and externally applied web tension, web wrap angle and other variables. The shape of the flexible web was determined by a normal balance stress equation, similar to that of the free surface of **coating** flow with a **constant surface tension**.  
DESCRIPTORS: English ; **coatings** ; computational fluid dynamics ; elasticity ; **film** flow ; hydrodynamics ; surface tension  
SECTION: Fluid Flow (06)  
SECTION CROSS-REFERENCE: Fluid Dynamics (31 )  
DECHEMA CLASSIFICATION: Fluid flow, single and multiphase systems, rheology, non-Newtonian fluids (1232 ); Flow of single and multiphase systems (511 )

27/9/2 (Item 1 from file: 2)  
DIALOG(R)File 2:INSPEC  
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5935925 INSPEC Abstract Number: A9814-6146-008, B9807-2520D-044  
**Title: CdS nanocrystal growth in thin silica films : evolution of size distribution function**  
Author(s): Lublinskaya, O.; Gurevich, S.; Ekimov, A.; Kudryavtsev, I.; Osinskii, A.; Gandais, M.; Wang, Y.  
Author Affiliation: A.F. Ioffe Phys. Inst., Acad. of Sci., St. Petersburg, Russia  
Journal: Journal of Crystal Growth Conference Title: J. Cryst. Growth (Netherlands) vol.184-185 p.360-4  
Publisher: Elsevier,  
Publication Date: 6 Feb. 1998 Country of Publication: Netherlands  
CODEN: JCRGAE ISSN: 0022-0248  
SICI: 0022-0248(19980206)184/185L:360:NGTS;1-R  
Material Identity Number: J037-98009  
U.S. Copyright Clearance Center Code: 0022-0248/98/\$19.00  
Conference Title: Eighth International Conference on II-VI Compounds  
Conference Date: 25-29 Aug. 1997 Conference Location: Grenoble, France  
Document Number: S0022-0248(97)00673-8  
Language: English Document Type: Conference Paper (PA); Journal Paper (JP)  
Treatment: Experimental (X)  
Abstract: The kinetics of semiconductor nanocrystal formation and growth as a result of solid solution phase decomposition in semiconductor-doped thin silica films fabricated by a co-sputtering technique was investigated. Two regimes of decomposition, attributed to the stages of nucleation and of growth at the expense of dissolved matter, were studied.

The shape of the nanocrystal size distribution was investigated in the various stages of the phase decomposition process. Various parameters of the decomposition process including **surface tension** of nanocrystals, **diffusion constant**, characteristic time of decomposition were estimated.  
(9 Refs)

Subfile: A B

Descriptors: absorption coefficients; annealing; cadmium compounds; crystallites; decomposition; II-VI semiconductors; insulating thin **films**; nanostructured materials; nucleation; semiconductor growth; silicon compounds; sputtered **coatings**; surface diffusion; surface tension; transmission electron microscopy

Identifiers: semiconductor nanocrystal formation; size distribution function; nanocrystal growth; semiconductor-doped thin silica **films**; cosputtering technique; decomposition; nucleation; dissolved matter; surface tension; diffusion constant; II-VI semiconductors; 1025 C; 800 C; 5 min to 10 h; 900 C; 1 h; 1050 C; 2 h; 4 to 6 nm; CdS; SiO/sub 2/; CdS-SiO/sub 2

Class Codes: A6146 (Solid clusters (including fullerenes) and nanoparticles); A6170A (Annealing processes); A6170N (Grain and twin boundaries); A6475 (Solubility, segregation, and mixing); A6480G (Microstructure); A6822 (Surface diffusion, segregation and interfacial compound formation); A6855 (Thin film growth, structure, and epitaxy); A7820D (Optical constants and parameters); A8115C (Deposition by sputtering); B2520D (II-VI and III-V semiconductors); B2550A (Annealing processes for semiconductor devices)

Chemical Indexing:

CdS bin - Cd bin - S bin (Elements - 2)

SiO2 bin - O2 bin - Si bin - O bin (Elements - 2)

CdS-SiO2 int - SiO2 int - CdS int - Cd int - Si int - O int - S int - SiO2 bin - CdS bin - Cd bin - O2 bin - Si bin - O bin - S bin  
(Elements - 2,2,4)

Numerical Indexing: temperature 1.30E+03 K; temperature 1.07E+03 K; time 3.0E+02 to 3.6E+04 s; temperature 1.17E+03 K; time 3.6E+03 s; temperature 1.32E+03 K; time 7.2E+03 s; size 4.0E-09 to 6.0E-09 m

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27/9/3 (Item 2 from file: 2)

DIALOG(R) File 2:INSPEC

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03898380 INSPEC Abstract Number: B91038492

**Title: Modelling fusible CVD glass planarization flow contours**

Author(s): White, L.K.

Author Affiliation: SRI Int., Princeton, NJ, USA

Conference Title: 1990 Proceedings. Seventh International IEEE VLSI Multilevel Interconnection Conference (Cat. No.90TH0325-1) p.377-9

Publisher: IEEE, New York, NY, USA

Publication Date: 1990 Country of Publication: USA 494 pp.

U.S. Copyright Clearance Center Code: TH-0325-1/90/0000-0377\$01.00

Conference Sponsor: IEEE

Conference Date: 12-13 June 1990 Conference Location: Santa Clara, CA, USA

Language: English Document Type: Conference Paper (PA)

Treatment: Theoretical (T)

Abstract: A comparison between experimental and simulated fusible chemical vapor deposition (CVD) glass planarization flow contours is presented. The simulated contours assume Newtonian viscous flow and a hydrostatic pressure gradient caused by the surface tension and the radius of curvature of the contour. At long flow lengths,  $\geq 100 \mu\text{m}$ , reasonable agreement between experiment and simulation is obtained. Assuming no change

in **film surface tension** , the flow rate **constant** increase is directly related to a tenfold decrease in **film viscosity** at the higher flow temperature. (4 Refs)

Subfile: B

Descriptors: CVD **coatings** ; flow simulation; glass; modelling; surface tension; surface treatment; viscosity of liquids

Identifiers: fusible CVD glass planarization; flow contours; chemical vapor deposition; simulated contours; Newtonian viscous flow; hydrostatic pressure gradient; surface tension; **film viscosity**

Class Codes: B2550E (Surface treatment and oxide film formation); B0520F (Vapour deposition); B0570 (Glasses)

27/9/4 (Item 1 from file: 8)

DIALOG(R) File 8: Ei Compendex(R)

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05616341. E.I. No: EIP00085271488

Title: **Magnetic semiconductor thin films of CdCr//2// minus //2// xIn //2//xSe//4 in spin glass state**

Author: Maksymowicz, L.J.; Lubecka, M.; Jablonski, R.

Corporate Source: Univ of Mining and Metallurgy, Krakow, Pol

Conference Title: 14th International Symposium on Soft Magnetic Materials (SMM14)

Conference Location: Balatonfured, Hung Conference Date: 19990908-19990910

Sponsor: Hungarian Academy of Sciences; OMBF (Hungary); EPS; Magnet-Technologies (Germany); et al.

E.I. Conference No.: 57027

Source: Journal of Magnetism and Magnetic Materials v 215 2000. p 579-581

Publication Year: 2000

CODEN: JMMMD C ISSN: 0304-8853

Language: English

Document Type: JA; (Journal Article) Treatment: X; (Experimental)

Journal Announcement: 0009W2

Abstract: Diluted by indium, **the** chalcogenide spinel CdCr//2// minus //2//xIn//2//xSe//4 is in an SG state. The temperature dependence of the **magnetization** (M) with comparison to the ordered magnetic state is modified by non-zero density of states in the energy band gap. Also, the unidirectional magnetic anisotropy is attributed to the SG state due to the Dzyaloshinskii-Moriya (DM) interaction. The investigated samples of CdCr //2// minus //2//xIn//2//xSe//4 were **obtained** by an RF sputtering technique. We **present** the temperature (from 5 to 160 K) dependence of M, unidirectional magnetic anisotropy field H//a// n and surface magnetic anisotropy **constant** K// s \*\*t. **The** magnetic parameters were determined from the temperature dependence of the ferromagnetic resonance (FMR) and spin wave resonance (SWR) data. (Author abstract) 6 Refs.

Descriptors: Magnetic **semiconductors** ; **Semiconducting** cadmium compounds; Thin **films** ; Glass; Magnetization; Electronic density of states ; Energy gap; Magnetic anisotropy; Magnetron sputtering; Thermal effects

Identifiers: Cadmium chromium indium **selenide** ; Chalcogenide; **Spin** wave resonance

Classification Codes:

712.1.2 (Compound Semiconducting Materials)

708.4 (Magnetic Materials); 712.1 (Semiconducting Materials); 812.3 (Glass); 701.2 (Magnetism: Basic Concepts & Phenomena); 931.3 (Atomic & Molecular Physics)

708 (Electric & Magnetic Materials); 712 (Electronic & Thermionic Materials); 812 (Ceramics & Refractories); 701 (Electricity & Magnetism); 931 (Applied Physics)

70 (ELECTRICAL ENGINEERING); 71 (ELECTRONICS & COMMUNICATIONS); 81  
(CHEMICAL PROCESS INDUSTRIES); 93 (ENGINEERING PHYSICS)

27/9/5 (Item 2 from file: 8)  
DIALOG(R) File 8: Ei Compendex(R)  
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04107436 E.I. No: EIP95032619988

**Title:** Modeling of coating flows on curved surfaces

**Author:** Schwartz, L.W.; Weidner, D.E.

**Corporate Source:** Univ of Delaware, Newark, DE, USA

**Source:** Journal of Engineering Mathematics v 29 n 1 Jan 1995. p 91-103

**Publication Year:** 1995

**CODEN:** JLEMAU **ISSN:** 0022-0833

**Language:** English

**Document Type:** JA; (Journal Article) **Treatment:** T; (Theoretical)

**Journal Announcement:** 9505W2

**Abstract:** The equations describing the temporal evolution of a thin, Newtonian, viscous liquid layer are extended to include the effect of substrate curvature. It is demonstrated that, subject to the standard assumptions required for the validity of lubrication theory, the surface curvature is equivalent to an applied time-independent overpressure distribution. Within the mathematical model, a variety of substrate shapes, possessing both 'inside' and 'outside' corners, are shown to be equivalent. Starting with an initially uniform coating layer, the evolving coating profile is calculated for substrates with piecewise constant curvature. Ultimately, surface tension forces drive the solutions to stable minimum-energy configurations. For small time, the surface profile history, for a substrate with a single curvature discontinuity, is given as the self-similar solution to a linear fourth-order diffusive equation. Using a Fourier transform, the solution to the linear problem is found as a convergent infinite series. This Green's function generates the general solution to the linearized problem for arbitrary substrate shapes. Calculated solutions to the non-linear problem are suggestive of coating defects observed in industrial applications. (Author abstract) 12 Refs.

**Descriptors:** Mathematical models; Coatings; Flow of fluids; Thin films; Surfaces; Surface tension; Substrates; Lubrication; Fourier transforms; Green's function

**Identifiers:** Coating flow; Curved surfaces; Linear fourth-order diffusive equation; Thin Newtonian viscous liquid layer; Convergent infinite series; Coating defects

**Classification Codes:**

921.6 (Numerical Methods); 813.2 (Coating Materials); 631.1 (Fluid Flow, General); 931.2 (Physical Properties of Gases, Liquids & Solids); 607.2 (Lubrication); 921.3 (Mathematical Transformations)

921 (Applied Mathematics); 813 (Coatings & Finishes); 631 (Fluid Flow & Hydrodynamics); 931 (Applied Physics); 607 (Lubricants & Lubrication)

92 (ENGINEERING MATHEMATICS); 81 (CHEMICAL PROCESS INDUSTRIES); 63 (FLUID DYNAMICS & VACUUM TECHNOLOGY); 93 (ENGINEERING PHYSICS); 60 (MECHANICAL ENGINEERING)

27/9/6 (Item 3 from file: 8)  
DIALOG(R) File 8: Ei Compendex(R)  
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03463790 E.I. Monthly No: EI9208100396

**Title:** Flow properties and contour modeling of fusible borophosphosilicate glasses.

Author: White, L. K.; Miszkowski, N. A.; Kurylo, W. A.; Shaw, J. M.  
Corporate Source: SRI Intl Princeton, NJ, USA  
Source: Journal of the Electrochemical Society v 139 n 3 Mar 1992 p 822-826

Publication Year: 1992

CODEN: JESOAN ISSN: 0013-4651

Language: English

Document Type: JA; (Journal Article) Treatment: T; (Theoretical); X; (Experimental)

Journal Announcement: 9208

Abstract: The viscous flow properties of fusible borophosphosilicate glasses (BPSG) deposited on polysilicon topography are analyzed. A model assuming Newtonian viscous flow and a driving force caused by the surface tension and the radius of curvature of the contour is used. The model uses the equation  $A/f$  equals  $A/0 \exp(-k/0 \gamma h^{3t}/\eta \lambda^{4})$  where,  $k/0$  is a **constant**,  $\gamma$  is the **surface tension**,  $h$  the deposited **film** thickness,  $t$  the flow time,  $\eta$  the viscosity, and  $\lambda$  the periodicity of a sinusoidal surface oscillation with an initial amplitude,  $A/0$ , and final amplitude,  $A/f$ . Experimental results are presented to verify the derived relationships between the deposited **film** thickness and the periodicity of the topography. Comparisons between experimental and simulated contours are made. At long flow lengths, greater than equivalent to 150  $\mu$  m, as defined by a flow rate constant and the flow time, reasonable agreement between experiment and simulation is obtained. Flow rate constants for representative BPSG glasses are reported for various flow temperatures. (Author abstract) 19 Refs.

Descriptors: GLASS--\*Molten; FLOW OF FLUIDS--Viscous; LIQUIDS--Newtonian; SEMICONDUCTING SILICON-- **Coatings**; FLUID DYNAMICS--Mathematical Models

Identifiers: CONTOUR MODELING; BOROPHOSPHOSILICATE GLASSES

Classification Codes:

812 (Ceramics & Refractories); 631 (Fluid Flow & Hydrodynamics); 921 (Applied Mathematics); 931 (Applied Physics); 712 (Electronic & Thermionic Materials)

81 (CHEMICAL PROCESS INDUSTRIES); 63 (FLUID DYNAMICS & VACUUM TECHNOLOGY); 92 (ENGINEERING MATHEMATICS); 93 (ENGINEERING PHYSICS); 71 (ELECTRONICS & COMMUNICATIONS)

27/9/7 - (Item 4 from file: 8)

DIALOG(R)File 8:Ei Compendex(R)

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01902268 E.I. Monthly No: EIM8510-065503

Title: **NEW APPROACHES TO THE PROBLEM OF CORROSION PROTECTION BY MEANS OF ORGANIC COATINGS**.

Author: Imai, Takeo

Corporate Source: Kansai Paint Co, Hiratsuka, Jpn

Conference Title: Organic Coatings, Science and Technology, Volume 6. (Papers presented at the Eighth International Conference in Organic Coatings Science and Technology.)

Conference Location: Athens, Greece Conference Date: 19820712

E.I. Conference No.: 06838

Source: Organic Coatings, Science and Technology v 6. Publ by Marcel Dekker Inc, New York, NY, USA and Basel, Switz p 325-350

Publication Year: 1984

CODEN: ORGCD8 ISBN: 0-8247-7044-7

Language: English

Document Type: PA; (Conference Paper)

Journal Announcement: 8510

Abstract: The resistivity against permeation of corrosive materials and the adhesion of **films** to substrates are considered to be the essential

functions required for anti-corrosive **coatings** . In order to elucidate the roles played by these functions, double-layer **coatings** were employed in this study. It was found that the stress-relaxation property as well as the barrier effect to oxygen permeation are required for the bulk portion of **coatings** , and hydrogen-bonding capability of **coated films** has played a major role at the interface between **coatings** and substrates. 8 refs.

Descriptors: PROTECTIVE **COATINGS** ; CORROSION PROTECTION; ADHESION-- Testing; PHENOLS

Identifiers: SALT FOG TESTS; NATURAL WEATHERING TEST; P-SUBSTITUTED PHENOLS; HAMMETT'S ACIDITY **CONSTANT** ; **SURFACE TENSION** ; HATA'S EQUATION  
Classification Codes:

813 (Coatings & Finishes); 539 (Metals Corrosion & Protection); 802 (Chemical Apparatus & Plants); 804 (Chemical Products)

81 (CHEMICAL PROCESS INDUSTRIES); 53 (METALLURGICAL ENGINEERING); 80 (CHEMICAL ENGINEERING)

27/9/8 (Item 1 from file: 347)

DIALOG(R) File 347:JAPIO

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07082737

METHOD FOR PRODUCING HEAT-SEALABLE/NON-HEAT-SEALABLE BIAXIALLY ORIENTED POLYPROPYLENE **FILMS** APPLICABLE TO WATER BASE INK PRINTING AND METALLIZING TREATMENT SUCH AS VACUUM **PLATING** , AND PRODUCT PRODUCED THEREBY

PUB. NO.: 2001-310384 [JP 2001310384 A]

PUBLISHED: November 06, 2001 (20011106)

INVENTOR(s): RIN HOKIN

APPLICANT(s): NAN YA PLAST CORP

APPL. NO.: 2000-129165 [JP 2000129165]

FILED: April 28, 2000 (20000428)

INTL CLASS: B29C-055/14; C08J-007/00; B29K-023:00; B29L-009:00

#### ABSTRACT

PROBLEM TO BE SOLVED: To obtain a biaxially oriented polypropylene **film** which has **stable surface tension** and excellent flatness and is applicable to water base ink printing and a metallizing product such as vacuum **plating** which is required for high sticking strength and adhesive force to aluminum foil.

SOLUTION: The printing surface or surface to be a **plating** surface of the coextruded biaxially oriented polypropylene **film** comprising three layers in which an antistatic agent and an antisticking agent are mixed in a polypropylene homopolymer is subjected to flame treatment by the combustion flame of liquefied natural gas containing at least 85% of methane under conditions of a polarization voltage of 0.1-0.8 kV, the optimum voltage of 0.2 kV, the temperature of a cooling roll of 20-50°C, the optimum temperature of 25°C, the temperature of flame of 700-900°C, and the optimum temperature 760°C.

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27/9/9 (Item 2 from file: 347)

DIALOG(R) File 347:JAPIO

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02301567

RELEASE LINER AND DOUBLE- **COATED** PRESSURE-SENSITIVE TAPE OF SHEET OBTAINED

BY USING THE SAME

PUB. NO.: 62-218467 [JP 62218467 A]  
PUBLISHED: September 25, 1987 (19870925)  
INVENTOR(s): YABE NAOTO  
APPLICANT(s): TOYO INK MFG CO LTD [352425] (A Japanese Company or Corporation), JP (Japan)  
APPL. NO.: 61-060732 [JP 8660732]  
FILED: March 20, 1986 (19860320)  
INTL CLASS: [4] C09J-007/02; B32B-007/06; C08J-005/18; C08L-023/02; C09J-007/02; C08L-023/02; C08L-083/04  
JAPIO CLASS: 14.7 (ORGANIC CHEMISTRY -- Coating Material Adhesives); 14.2 (ORGANIC CHEMISTRY -- High Polymer Molecular Compounds)  
JOURNAL: Section: C, Section No. 481, Vol. 12, No. 82, Pg. 137, March 15, 1988 (19880315)

ABSTRACT

PURPOSE: To provide a release liner having a low **surface tension** and a **stable** peel strength, by molding a mixture of a polyolefin resin and a silicone resin into a **film**.

CONSTITUTION: 100pts.wt. polyolefin resin (A) (e.g., low-density PE resin) is mixed with 0.01-20pts.wt., preferably 0.1-10pts.wt. high-molecular compound (B) having an organopolysiloxane structure, preferably rubbery silicone resin (e.g., silicone rubber) and optionally, a lubricant (e.g., stearic acid), a filler (e.g., BaSO(sub 4)) and a colorant (C) to obtain a mixture. The mixture is molded at 140-180 deg.C into a **film** of 1-500.mu. in thickness, thus obtaining a release liner. A pressure-sensitive adhesive is applied to both sides of a nonwoven fabric, a plastic **film** or an expanded plastic sheet to form a pressure-sensitive adhesive layer of 10-100.mu. in thickness. The resulting tape or sheet is laminated onto said release liner and wound into a roll.

27/9/10 (Item 1 from file: 350)  
DIALOG(R)File 350:Derwent WPIX  
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014835292 \*\*Image available\*\*  
WPI Acc No: 2002-655998/200270  
Related WPI Acc No: 2002-178643  
XRAM Acc No: C02-184150  
XRPX Acc No: N02-518462

Improving thermal fatigue life of thermal barrier coating system to protect gas turbine engine components involves flattening grain boundary ridges by peening and depositing thermal barrier coating

Patent Assignee: SPITSBERG I T (SPIT-I)  
Inventor: SPITSBERG I T  
Number of Countries: 001 Number of Patents: 001  
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 20020094447	A1	20020718	US 2000569912	A	20000511	200270 B
			US 200250659	A	20020116	

Priority Applications (No Type Date): US 2000569912 A 20000511; US 200250659 A 20020116

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
US 20020094447	A1	10	B32B-015/04	Div ex application US 2000569912

Abstract (Basic): US 20020094447 A1

NOVELTY - Improving thermal fatigue life of a thermal barrier coating system involves depositing bond coat on component, which are columnar grains; peening surface of bond coat at preset intensity to flatten grain boundary ridge(s) to form flattened grain boundary surfaces; and depositing thermal barrier coating on bond coat surface. The bond coat is deposited such that they have columnar grain structure.

DETAILED DESCRIPTION - Method of improving the thermal fatigue life of a thermal barrier coating system involves depositing bond coat on component, peening the surface of bond coat at preset intensity to flatten at least some of grain boundary ridges to form flattened grain boundary surfaces and depositing thermal barrier coating on the surface of bond coat. The bond coat is deposited such that they produce columnar grains. The columnar grains extend substantially through that portion of the bond coat overlying the surface of component. The grains have grain boundaries exposed at the surface of the bond coat and the grain boundaries define grain boundary ridges at the surface of bond coat. The thermal barrier coating system comprises a thermal barrier coating adhered to a diffusion aluminide bond coat on the surface of a component. The bond coat is single-phase aluminide, two-phase aluminide, platinum aluminide bond coat or overlay aluminide bond coat.

An INDEPENDENT CLAIM is included for a thermal barrier coating system.

USE - Improving thermal fatigue life of thermal barrier coating system used to protect gas turbine components such as high and low pressure turbine nozzles and blades, shrouds, combustible liners and augmentor hardware of glass turbine engines.

ADVANTAGE - The flattened grain boundaries are much less prone to accelerated oxidation than the original grain boundaries. The surface modification significantly inhibits thermal grooving and thermal creep that has been determined to initiate and/or rapidly progress at grain boundaries exposed at the bond coat surface. A lower oxidation rate at the grain boundaries may eliminate a cause for the creation of stress concentration sites for enhanced localized creep and oxide crack initiation at the bond coat surface which are believed to cause the alumina layer to convolute and fracture. The modified bond coat grain configuration exhibits more stable surface tension conditions, which slow the thermal grooving effect. By eliminating or at least inhibiting the formation of sites where deformation of the alumina layer occurs, and thus where a fracture ultimately initiates and develops with thermal cycling, the spallation life of the thermal barrier coating adhered by the bond coat is significantly increased.

DESCRIPTION OF DRAWING(S) - The figure shows the high pressure turbine blade.

pp; 10 DwgNo 1/7

Title Terms: IMPROVE; THERMAL; FATIGUE; LIFE; THERMAL; BARRIER; COATING ; SYSTEM; PROTECT; GAS; TURBINE; ENGINE; COMPONENT; FLATTEN; GRAIN; BOUNDARY; RIDGE; PEEN; DEPOSIT; THERMAL; BARRIER; COATING

Derwent Class: G02; M13; P42; P73

International Patent Class (Main): B32B-015/04

International Patent Class (Additional): C23C-016/00

File Segment: CPI; EngPI

Manual Codes (CPI/A-N): G02-A05; M13-E

27/9/11 (Item 2 from file: 350)  
DIALOG(R) File 350:Derwent WPIX

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013376323      \*\*Image available\*\*  
WPI Acc No: 2000-548261/200050  
XRPX Acc No: N00-405571

**Digital micromirror manufacture method involves patterning and etching of metal layer over spacer**

Patent Assignee: TEXAS INSTR INC (TEXI )

Inventor: KAERIYAMA T

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 6099132	A	20000808	US 94311480	A	19940923	200050 B
			US 95483777	A	19950607	

Priority Applications (No Type Date): US 94311480 A 19940923; US 95483777 A 19950607

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
US 6099132	A	7	G02B-007/182	Div ex application US 94311480

Abstract (Basic): US 6099132 A

NOVELTY - Activation circuitry is formed on a semiconductor wafer with a pad film acting as insulator between two differently biased surfaces. The pad film has a spacer layer with vias cut into it which are filled by a layer of metal laid over the spacer layer. Another metal layer over the first is patterned and etched to form mirrors and hinges. The spacer layer is then removed.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for a digital micro mirror.

USE - For manufacturing a digital micro mirror.

ADVANTAGE - Moving parts do not stick together.

DESCRIPTION OF DRAWING(S) - The drawing shows a possibility for the placement of a protective coating relative to the activation circuitry of a micromechanical device.

Landing electrodes (404a, b)

Addressing electrodes (408a, b)

pp; 7 DwgNo 4D/4

Technology Focus:

TECHNOLOGY FOCUS - INORGANIC CHEMISTRY - The pad film can be made of an oxide or a nitride, with the properties of low surface tension, stable up to 110degreesC, high abrasion and humidity resistance, and high surface stability.

Title Terms: DIGITAL; MANUFACTURE; METHOD; PATTERN; ETCH; METAL; LAYER; SPACE

Derwent Class: P81; U11; U12

International Patent Class (Main): G02B-007/182

File Segment: EPI; EngPI

Manual Codes (EPI/S-X): U11-C18C; U12-B03F

27/9/12      (Item 3 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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011564280

WPI Acc No: 1997-540761/199750

XRAM Acc No: C97-173094

XRPX Acc No: N97-450097

**Prodn. of photographic material - by simultaneously coated on**

**continuing base films by using a curtain coating device**

Patent Assignee: KONICA CORP (KONS )

Inventor: FUKAZAWA K; KONDO Y; NISHIWAKI A

Number of Countries: 002 Number of Patents: 002

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
JP 9258368	A	19971003	JP 9664418	A	19960321	199750 B
US 5871821	A	19990216	US 97823884	A	19970317	199914

Priority Applications (No Type Date): JP 9664418 A 19960321

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
JP 9258368	A		4 G03C-001/74	
US 5871821	A		B05D-001/30	

Abstract (Basic): JP 9258368 A

At least three layers of **coating** solns. are simultaneously **coated** on continuing base **films** by using a curtain **coating** device. The intermediate layer of the **coating** soln. has dynamic surface tension higher than that of the outer layer of the **coating** soln.

**ADVANTAGE** - Specifying the relation in each **coating** soln. of the dynamic **surface tension** **stably** forms a curtain **film** to produce the photographic material having stable **coating**. No new facilities or modifications in the prodn. equipment are required.

Dwg.0/2

Title Terms: PRODUCE; PHOTOGRAPH; MATERIAL; SIMULTANEOUS; **COATING** ;

CONTINUE; BASE; **FILM** ; CURTAIN; **COATING** ; DEVICE

Derwent Class: G06; P42; P83

International Patent Class (Main): B05D-001/30; G03C-001/74

International Patent Class (Additional): B05C-005/00

File Segment: CPI; EngPI

Manual Codes (CPI/A-N): G06-A10; G06-C14; G06-E04

27/9/13 (Item 4 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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011420527

WPI Acc No: 1997-398434/199737

XRAM Acc No: C97-128167

XRPX Acc No: N97-331594

**Mould release film used as protecting film - obtained by laying at least one face of polyethylene naphthalate film with mould release layer**

Patent Assignee: TEIJIN LTD (TEIJ )

Number of Countries: 001 Number of Patents: 002

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
JP 9174779	A	19970708	JP 95343047	A	19951228	199737 B
JP 3126647	B2	20010122	JP 95343047	A	19951228	200112

Priority Applications (No Type Date): JP 95343047 A 19951228

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
JP 9174779	A		7 B32B-027/36	
JP 3126647	B2		7 B32B-027/36	Previous Publ. patent JP 9174779

Abstract (Basic): JP 9174779 A

A mould release **film** is obtained by laying at least one face of

(A) a film composed of polyethylene-2,6-naphthalate with (B) a mould release layer whose maximum surface tension, obtained from  $\gamma_1 \max = 1/b + \gamma c/2$  (I), is 50-90 dyne/cm.  $\gamma_1 \max$  = maximum surface tension : b = constant obtained from Zisman plot; and  $\gamma c$  = critical surface tension.

USE - Used as a protecting film for a pressure sensitive adhesive coat .

Dwg.0/0

Title Terms: MOULD; RELEASE; FILM ; PROTECT; FILM ; OBTAIN; LAY; ONE; FACE; POLYETHYLENE; NAPHTHALATE; FILM ; MOULD; RELEASE; LAYER

Derwent Class: A23; A81; G03; P73

International Patent Class (Main): B32B-027/36

International Patent Class (Additional): B32B-027/00

File Segment: CPI; EngPI

Manual Codes (CPI/A-N): A05-E05A; A08-M03; A12-A01A; G02-A05E; G03-B04

Polymer Indexing (PS):

<01>

\*001\* 018; S9999 S1285-R; S9999 S1581; P1989 P1978 P0839 H0293 D01 D10 D11 D18 D20 D32 D50 D63 D93 D78 E00 E22 F41 F90

\*002\* 018; ND01; ND07; Q9999 Q7818-R; N9999 N7192 N7023; K9698 K9676; K9701 K9676

\*003\* 018; N9999 N7090 N7034 N7023; N9999 N7147 N7034 N7023; B9999 B5447 B5414 B5403 B5276

<02>

\*001\* 018; S9999 S1581; P0000

\*002\* 018; ND01; ND07; Q9999 Q7818-R; N9999 N7192 N7023; K9698 K9676; K9701 K9676

\*003\* 018; N9999 N7147 N7034 N7023; K9712 K9676; Q9999 Q7205 Q7114; B9999 B5390 B5276

<03>

\*001\* 018; P0000

\*002\* 018; ND01; ND07; Q9999 Q7818-R; N9999 N7192 N7023; K9698 K9676; K9701 K9676

\*003\* 018; Q9999 Q6677 Q6644; B9999 B5301 B5298 B5276; K9574 K9483; Q9999 Q7114-R

27/9/14 (Item 5 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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011082919

WPI Acc No: 1997-060843/199706

XRAM Acc No: C97-019790

XRPX Acc No: N97-050390

Mould-releasable film as protecting film for adhesive coats - obtd. by applying mould-releasable layer having specified max. surface tension to mould-releasable film

Patent Assignee: TEIJIN LTD (TEIJ )

Number of Countries: 001 Number of Patents: 002

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
JP 8309943	A	19961126	JP 95124864	A	19950524	199706 B
JP 3126628	B2	20010122	JP 95124864	A	19950524	200112

Priority Applications (No Type Date): JP 95124864 A 19950524

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
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JP 8309943	A	6	B32B-027/36		
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JP 3126628	B2	6	B32B-027/00	Previous Publ. patent JP 8309943	
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Abstract (Basic): JP 8309943 A

A mould-releasable film is obtd. by applying to at least one face of a polyester film a mould-releasable layer of 0.1-0.4 microns centre line average height and a 50-90 dyne/cm of max. surface tension of formula (I)  $\gamma_{\text{max}} = 1/b + \gamma_{\text{mac}}/2$  (I),  $\gamma_{\text{mac}}$  max. surface tension; b = constant obtd. from a Zisman plot; and  $\gamma_{\text{C}}$  = critical surface tension.

USE - As a protecting film for aq. pressure sensitive adhesive coats.

Dwg.0/0

Title Terms: MOULD; RELEASE; FILM; PROTECT; FILM; ADHESIVE; COAT; OBTAIN; APPLY; MOULD; RELEASE; LAYER; SPECIFIED; MAXIMUM; SURFACE; TENSION; MOULD; RELEASE; FILM

Derwent Class: A23; A94; G03; P73

International Patent Class (Main): B32B-027/00; B32B-027/36

International Patent Class (Additional): B32B-007/06

File Segment: CPI; EngPI

Manual Codes (CPI/A-N): A05-E01D3; A12-A01A; A12-S06; G03-B04

Polymer Indexing (PS):

<01>

\*001\* 018; S9999 S1285-R; P0839-R F41 D01 D63

\*002\* 018; Q9999 Q6633; K9676-R; K9687 K9676; K9712 K9676; K9574 K9483; ND01; B9999 B5323 B5298 B5276

\*003\* 018; A999 A351 A340; B9999 B5390 B5276

<02>

\*001\* 018; P0000; S9999 S1025 S1014; S9999 S1616 S1605

\*002\* 018; Q9999 Q6633; K9676-R; K9687 K9676; K9712 K9676; K9574 K9483; ND01; B9999 B5323 B5298 B5276

\*003\* 018; Q9999 Q6677 Q6644

\*004\* 018; A999 A351 A340; B9999 B5390 B5276

\*005\* 018; R01740 G2335 D00 F20 H- O- 6A; A999 A475

27/9/15 (Item 6 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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011082910

WPI Acc No: 1997-060834/199706

XRAM Acc No: C97-019781

XRPX Acc No: N97-050381

Mould-releasable film for aq. pressure sensitive coats - obtd. by laying at least one face of polyester film with mould-releasable layer.

Patent Assignee: TEIJIN LTD (TEIJ)

Number of Countries: 001 Number of Patents: 002

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
JP 8309933	A	19961126	JP 95119970	A	19950518	199706 B
JP 3103007	B2	20001023	JP 95119970	A	19950518	200056

Priority Applications (No Type Date): JP 95119970 A 19950518

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
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JP 8309933	A	5	B32B-027/00		
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JP 3103007	B2	5	B32B-027/00	Previous Publ. patent JP 8309933	
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Abstract (Basic): JP 8309933 A

A mould-releasable film is obtd. by laying at least one face of a polyester film with a mould-releasable layer of 30-50 dyne/cm in the

max. surface tension obtd. from expression (I).

$\gamma_{\text{max}} = 1/b + \gamma_{\text{mac}}/2$  (I)

$\gamma_{\text{max}} = \text{max. surface tension}$  : b = constant obtd. from a Zisman plot; and  $\gamma_{\text{mac}}$  = critical surface tension.

USE - As a protecting film for aq. press. sensitive coats.

Dwg. 0/0

Title Terms: MOULD; RELEASE; FILM; AQUEOUS; PRESSURE; SENSITIVE; COAT; OBTAIN; LAY; ONE; FACE; POLYESTER; FILM; MOULD; RELEASE; LAYER

Derwent Class: A23; A94; G03; P73

International Patent Class (Main): B32B-027/00

International Patent Class (Additional): B32B-027/36

File Segment: CPI; EngPI

Manual Codes (CPI/A-N): A05-E01D; A08-M03B; A12-A01A; A12-A05; G03-B01;

G03-B02; G03-B04

Polymer Indexing (PS):

<01>

\*001\* 018; P0000

\*002\* 018; Q9999 Q6677 Q6644; B9999 B5390 B5276; ND01

\*003\* 018; A999 A351 A340

<02>

\*001\* 018; P1978-R P0839 D01 D50 D63 F41; S9999 S1285-R; A999 A351 A340;

A999 A782

27/9/16 (Item 7 from file: 350)

DIALOG(R) File 350:Derwent WPIX

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003337177

WPI Acc No: 1982-J5190E/198228

Ink supply system for ink jet system printer - has heat generating pipe to maintain constant viscosity and surface tension of ink supplied  
Patent Assignee: NIPPON TELEGRAPH & TELEPHONE CORP (NITE); SHARP KK (SHAF)

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 4337469	A	19820629				198228 B

Priority Applications (No Type Date): JP 74103311 A 19740906

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 4337469	A		9		

Abstract (Basic): US 4337469 A

The inner surface of the heat generating pipe (52) is coated with an electrically insulating thin film (54) made of, for example, glass. The thin film (54) functions to electrically insulate the ink liquid from the heat generating pipe (52) and to prevent the creation of electrolyzed impurities within the ink liquid. Terminals (56,58) of the heat generating pipe (52) are connected with output terminals of a control circuit which control the ink liquid temperature.

A protect sensor (60) made of, for example, a positive temperature coefficient thermistor is attached to the centre portion of the outer surface of the heat generating pipe (52) to inhibit the accidental temperature rise of the heat generating pipe (52) thus preventing the occurrence or creation of bubbles in the ink liquid and protecting the thin film (54) from being damaged. Terminals (62,64) of the protect sensor (60) are connected with terminals in the control circuit.

Title Terms: INK; SUPPLY; SYSTEM; INK; JET; SYSTEM; PRINT; HEAT; GENERATE;  
PIPE; MAINTAIN; CONSTANT; VISCOSITY; SURFACE; TENSION; INK; SUPPLY  
Derwent Class: S02; T04  
International Patent Class (Additional): G01D-015/18  
File Segment: EPI  
Manual Codes (EPI/S-X): S02-K06B2; T04-G02

27/9/17 (Item 1 from file: 94)

DIALOG(R)File 94:JICST-EPlus

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05138932 JICST ACCESSION NUMBER: 02A0165832 FILE SEGMENT: JICST-E  
**Effect of oxygen partial pressure of ambient atmosphere on surface tension  
and marangoni convection of molten silicon.**

HIBIYA TAKETOSHI (1); AZAMI TAKESHI (1); MUKAI KATSUHIRO (2)

(1) NEC Corp., Fundamental Res. Lab.; (2) Kyushu Inst. of Technol., Fac.  
of Eng.

Thermophys Prop, 2001, VOL.22nd, PAGE.280-282, FIG.4, REF.6

JOURNAL NUMBER: X0031AAB ISSN NO: 0911-1743

UNIVERSAL DECIMAL CLASSIFICATION: 544.72-14-16 532.529+532.546

548.5:621.315.592

LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan

DOCUMENT TYPE: Conference Proceeding

ARTICLE TYPE: Short Communication

MEDIA TYPE: Printed Publication

ABSTRACT: The effect of oxygen partial pressure of ambient atmosphere on surface tension, its temperature coefficient and the Marangoni flow of molten silicon is discussed. Surface tension measured in an atmosphere with carefully controlled oxygen partial pressure shows a marked dependence on oxygen partial pressure. Below the equilibrium oxygen partial pressure for the SiO<sub>2</sub> phase, Po<sub>2</sub>(SiO<sub>2</sub>), surface tension decreased with increasing Po<sub>2</sub>. Above the Po<sub>2</sub>(SiO<sub>2</sub>), **surface tension looks constant** regardless of Po<sub>2</sub>, or increases with Po<sub>2</sub> slightly. This suggests that below the Po<sub>2</sub>(SiO<sub>2</sub>) a surface of molten silicon is bare adsorbed with oxygen atmos, whereas above the Po<sub>2</sub>(SiO<sub>2</sub>) a surface would be **coated** with a thin SiO<sub>2</sub> **film**. When three phases (melt, solid and gas) coexist, the Gibbs' thermodynamical freedom becomes unity; oxygen concentration in the melt is **constant**; thus **surface tension is constant**. Therefore, even though the temperature coefficients of surface tension for molten silicon of less than  $|\frac{\partial \sigma}{\partial T}| < 0.2 \times 10^{-3} \text{ N/m-K}$ , which have been often reported, can be obtained above the Po<sub>2</sub>(SiO<sub>2</sub>), these values should not be used for numerical calculation for the Marangoni flow of molten silicon. Through the above context the Marangoni flow on the flat melt surface contained within a silica crucible for the Czochralski system is discussed. A thermal inverse layer is formed on the strong buoyancy flow vortex due to strong radiation heat loss from the surface. The thermocapillary effect due to the temperature difference between the crucible wall and the growing crystal causes the Marangoni flow. Also the solutocapillary effect due to the oxygen concentration difference causes the Marangoni flow. Oxygen concentration is maximum and constant at the crucible wall, where the Gibbs' thermodynamical freedom is unity. Due to evaporation of SiO, oxygen concentration is diluted near the growing crystal.... (author abst.)

DESCRIPTORS: silicon; liquid semiconductor; interfacial tension;  
temperature dependence; oxygen; partial pressure; Marangoni effect;  
Czochralski method; floating zone melting

IDENTIFIERS: Marangoni convection; oxygen partial pressure

BROADER DESCRIPTORS: third row element; element; carbon group element;  
liquid; semiconductor; tension(force); force; mechanical quantity;

dependence; oxygen group element; second row element; pressure; effect;  
crystal pulling method; liquid phase growth; crystal growth; zone  
melting; purification; melting process  
CLASSIFICATION CODE(S): CB12050B; BC02060J; BK13040X

27/9/18 (Item 1 from file: 34)  
DIALOG(R) File 34:SciSearch(R) Cited Ref Sci  
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10266539 Genuine Article#: 504BB Number of References: 52  
**Title: Slowly accreting ice due to supercooled water impacting on a cold surface**  
Author(s): Myers TG (REPRINT) ; Charpin JPF; Thompson CP  
Corporate Source: Univ Cape Town, Dept Math & Appl Math, ZA-7701  
Rondebosch//South Africa/ (REPRINT); Univ Cape Town, Dept Math & Appl  
Math, ZA-7701 Rondebosch//South Africa/; Cranfield Univ, Appl Math & Comp  
Grp, Cranfield MK43 0AL/Beds/England/  
Journal: PHYSICS OF FLUIDS, 2002, V14, N1 (JAN), P240-256  
ISSN: 1070-6631 Publication date: 20020100  
Publisher: AMER INST PHYSICS, CIRCULATION & FULFILLMENT DIV, 2 HUNTINGTON  
QUADRANGLE, STE 1 N O 1, MELVILLE, NY 11747-4501 USA  
Language: English Document Type: ARTICLE  
Geographic Location: South Africa; England  
Journal Subject Category: MECHANICS; PHYSICS, FLUIDS & PLASMAS  
Abstract: A theoretical model for ice growth due to droplets of supercooled  
fluid impacting on a subzero substrate is presented. In cold conditions  
rime (dry) ice forms and the problem reduces to solving a simple mass  
balance. In milder conditions glaze (wet) ice forms. The problem is  
then governed by coupled mass and energy balances, which determine the  
ice height and water layer thickness. The model is valid for "thin"  
water layers, such that lubrication theory may be applied and the  
Peclet number is small; it is applicable to ice accretion on stationary  
and moving structures. A number of analytical solutions are presented.  
Two- and three-dimensional numerical schemes are also presented, to  
solve the water flow equation, these employ a flux-limiting scheme to  
accurately model the capillary ridge at the leading edge of the flow.  
The method is then extended to incorporate ice accretion. Numerical  
results are presented for ice growth and water flow driven by gravity,  
**surface tension**, and a **constant** air shear. <(C)> 2002 American  
Institute of Physics.

Identifiers--KeyWord Plus(R): HYPERBOLIC CONSERVATION-LAWS; HIGH-RESOLUTION  
SCHEMES; DYNAMIC CONTACT LINES; THIN LIQUID- **FILMS** ; ADVANCING FRONT;  
**COATING** FLOWS; ICING MODEL; DRIVEN FLOW; AIR-FLOW; SOLIDIFICATION

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**Title:** The rate of spreading in spin coating

**Author(s):** Wilson SK (REPRINT) ; Hunt R; Duffy BR

**Corporate Source:** UNIV STRATHCLYDE, DEPT MATH, LIVINGSTONE TOWER, 26

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**Abstract:** In this paper we reconsider the fundamental problem of the centrifugally driven spreading of a thin drop of Newtonian fluid on a uniform solid substrate rotating with **constant** angular speed when **surface - tension** and moving-contact-line effects are significant. We discuss analytical solutions to a number of problems in the case of no

surface tension and in the asymptotic limit of weak surface tension, as well as numerical solutions in the case of weak but finite surface tension, and compare their predictions for the evolution of the radius of the drop (prior to the onset of instability) with the experimental results of Fraysse & Homsy (1994) and Spald & Homsy (1997). In particular, we provide a detailed analytical description of the no-surface-tension and weak-surface-tension asymptotic solutions. We demonstrate that, while the asymptotic solutions do indeed capture many of the qualitative features of the experimental results, quantitative agreement for the evolution of the radius of the drop prior to the onset of instability is possible only when weak but finite surface-tension effects are included. Furthermore, we also show that both a fixed- and a specific variable-contact-angle condition (or 'Tanner law') are capable of reproducing the experimental results well.

Identifiers--Keyword Plus(R): DYNAMIC CONTACT LINES; THIN LIQUID- FILMS ; ROTATING-DISK; DROPS; INSTABILITY; STABILITY; FLUID; FLOW; SURFACES; RIVULET

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DIALOG(R)File 34:SciSearch(R) Cited Ref Sci  
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02483264 Genuine Article#: LE523 Number of References: 9

Title: THE LEVELING OF PAINT FILMS

Author(s): WILSON SK

Corporate Source: UNIV STRATHCLYDE, DEPT MATH, LIVINGSTONE TOWER, 26 RICHMOND

ST/GLASGOW G1 1XH//SCOTLAND/

Journal: IMA JOURNAL OF APPLIED MATHEMATICS, 1993, V50, N2, P149-166

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Journal Subject Category: MATHEMATICS, APPLIED

Abstract: Using a brush to apply paint to a flat surface almost inevitably means that the bristles of the brush leave behind an uneven paint surface. As the paint dries out, these non-uniformities tend to flatten out to leave a protective and aesthetically pleasing even **coating**; however, experiments have shown that some solvent-based high-gloss alkyd paints can exhibit more unusual behaviour as they dry. In these experiments the initial rate of levelling was faster than that expected simply due to **constant surface tension** effects, and, much more unexpectedly, over a timescale of a few minutes the peaks of the original disturbance became troughs and vice versa. In this paper the author presents a mathematical model for the drying of a layer of solvent-based high-gloss alkyd paint and analyses the linear stability of a uniform layer of paint subject to an initial perturbation representing the marks left by a paint brush. Investigating the model highlights the crucial role played by solvent evaporation and leads to a plausible physical explanation of the observed phenomena. Furthermore, the analytical and numerical predictions of the model are found to be in good quantitative agreement with the experimental results.

Identifiers--KeyWords Plus: LIQUID- **FILMS** ; STABILITY

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?

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AN 1989:214788 CAPLUS

DN 110:214788

TI Scratch-resistant low-friction/low-surface-energy coating for silicon substrate

AU Chen, H. H.

CS Gen. Prod. Div., IBM Corp., Boulder, CO, 80301-9191, USA

SO Journal of Applied Polymer Science (1989), 37(2), 349-64

CODEN: JAPNAB; ISSN: 0021-8995

DT Journal

LA English

AB A smooth, ultrathin film of a di-Me siloxane (I) on a Si substrate is prepd. by spin-coating. This film gives a 0.06 dynamic coeff. of friction against paper, which is only about 1/3 of the coeff. of friction (0.21) between PTFE and paper. The coating is not scratchable by sliding a stainless steel stylus over the surface with a pressure >3.6 .times. 1010 dyn/cm<sup>2</sup>. The film displays a surface tension of 20.5 dyn/cm. It is stable in water and propylene glycol. The film is an effective and durable solid lubricant. The surface characteristics of a **spray**-coated I and a plasma-copolymerized thin film of perfluoropropane and 3,3,3-trifluoropropylmethyldimethoxysilane are also investigated. Both films show much lower scratch resistance, weaker adhesion of the Si substrate, and higher friction. The plasma film yields the same **surface tension** as the spin-coated I. Its surface energy, however, increases after soaking in water or propylene glycol. The exceptionally low friction and the unusually high scratch resistance of the ultrathin film of I are attributed to the absence of deformation and tearing components and a low adhesion component in the sliding friction mechanism.